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Land Use Planning and Sustaining the Military Land Base

Robert M. Lacey

July 2001

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Foreword

This study was conducted as an assignment for the Sustaining Base Leadership and Management (SBLM) program of the Army Management Staff College (AMSC). Mr. R. Bruce Chisholm was the faculty advisor to the author.

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1 Introduction

The Army is at a critical crossroad in maintaining the ability to train and exercise weapons capability. This is due to a series of events that will impact Army installations at a more dynamic pace in the future. First, there has been a tremendous growth in environmental legislation and regulation that Army installations must adhere to. Second, many Army training and testing installations are no longer isolated. Adjacent, expanding populations no longer view the Army as the economic benefactor it once was. Finally, the Army is in a state of transformation and will require these lands to sustain the future Objective Force.

These events relate to a theme that is now a topic of concern for the Army as well as the Department of Defense (DoD). This theme is "encroachment." To encroach is to intrude gradually on the rights and possessions of another. In this document the term encroachment is used to describe the results of land development outside military installation boundaries that intrude on the ability of the Army to train and test its warfighting capabilities. To adequately consider this issue it is important to note that encroachment is a two-way issue. Developing populations near installations often see their rights and possessions intruded upon by the noise, dust, and resource use associated with military activities.

Land use planning and development is the province of state and local governments. To maintain capabilities and readiness and support transformation the Army must take an immediate, professional, and local approach to influencing land use planning around installations. There are many tools available to accomplish this. However, these tools are used sporadically and generally after land use conflicts have impacted training or testing capability, or have resulted in litigation. Most installations lack the professional staff to influence local and regional land use decisions.

This document describes the encroachment issue and some of its complexities. Available tools to address encroachment are described, as is the current situation that affects their implementation. Finally a general conclusion and recommendation is provided.

2 The Sustaining Base Issue

Development (urban or rural growth) around installations is not new. Many major Army installations were established or expanded to support training during World War II (WWII). After WWII some lands were returned to the public domain. Those lands retained as installations were often isolated and near relatively small population centers. They were also seen as positive economic influences on regional economics since they provided employment. As time passed, development moved closer to or began to surround parts of installations (Figures 1 and 2).

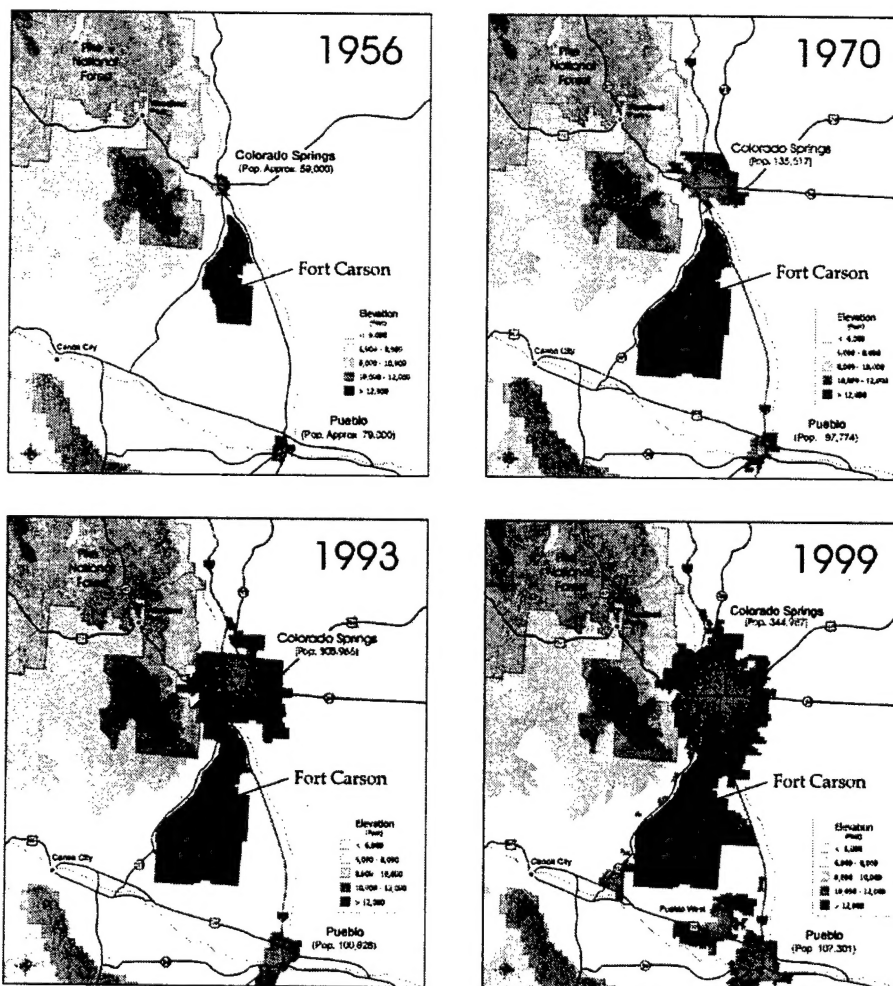


Figure 1. Historic population growth around Fort Carson, CO: 1956 – 1999.

Source: Graphics provided by Brian Deal, U.S. Army Construction Engineering Research Laboratory, Engineer Research and Development Center, U.S. Army Corps of Engineers. Growth simulation based on a Land Evaluation and Assessment Model being adapted for military use.

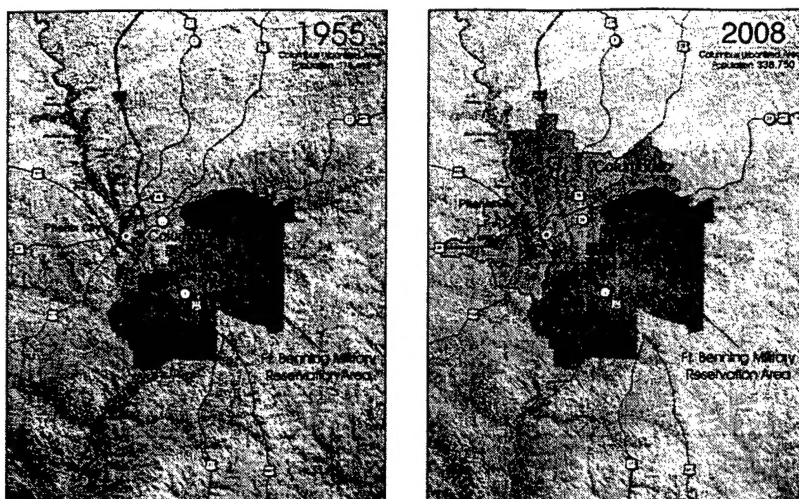


Figure 2. Historic population growth around Fort Benning, GA: 1955 – 2008.

Source: Graphics provided by Brian Deal, U.S. Army Construction Engineering Research Laboratory, Engineer Research and Development Center, U.S. Army Corps of Engineers. Growth simulation based on a Land Evaluation and Assessment Model being adapted for military use.

With this expansion and migration of population one firing point on an installation may be closed to reduce noise conflicts with a local landowner. A few years later another firing point may be closed for the same reason. However, 50 years later, as in the case of Fort Sill, Oklahoma, “the installation has abandoned several large-caliber weapon firing points” (*Airborne Noise Encroachment Action Plan* 2000). The cumulative impact is that as weapons are modernized, the installation can no longer support “new mission requirements (e.g., the stationing of MLRS [Multiple Launch Rocket System] battalions)” (*Airborne Noise Encroachment Action Plan* 2000).

In addition to adjacent residential and commercial development, other land use issues plague continued use of military lands. In 1973 Congress passed the Endangered Species Act (ESA). Since then over 1200 species have been added to the United States Lists of Endangered and Threatened Wildlife and Plants (*Summary of Listed Species, Listings, and Recovery Plans as of 2/28/2001* 2001). At the same time commodity (e.g., agriculture and forestry) development of land has increased to meet the needs of the United States population. Loss of diverse habitat on non-Federal property has been the result. Since installations are large with large areas devoted to undeveloped land, Army and other DoD lands have become refuges (technically refugia) for a number of threatened and endangered species. A report sponsored by the DoD Biodiversity Initiative indicated that DoD was the fifth largest Federal land manager, yet “the number of listed species on DoD lands is disproportionately great” (Leslie et al. 1996). These DoD lands, originally obtained for military use, have now become critical habitat that requires management to support the recovery of species. Perhaps the most infamous examples for the Army are the Red-cockaded Woodpecker in the south-

eastern United States and the Desert Tortoise at the Army's National Training Center (NTC) at Fort Irwin, California.

The ESA is one of a multitude of environmental laws and regulations affecting land use capabilities of installations. Add requirements associated with the Clean Water Act (CWA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), the Safe Drinking Water Act (SDWA), the National Historic Preservation Act (NHPA), and others, and management of the environment on military lands becomes a complex issue.

Legal interpretation and implementing regulations associated with environmental requirements add additional concerns. In 1997, Region I of the Environmental Protection Agency (EPA) issued an Administrative Order under the SDWA prohibiting the use of lead ammunition, propellants, explosives, and demolitions at the Massachusetts Military Reservation (MMR), a U.S. Army National Guard facility (*Unexploded Ordnance – Munitions Encroachment Issue Action Plan* 2000). This action effectively shut down the MMR.

In August 1999 the DoD issued Directive 4715.11, *Environmental Explosives Safety Management on Department of Defense Active and Inactive Ranges Within the United States*. The impact of this directive for individual installation and resource managers is not fully known. However, the directive's release has prompted a flurry of activity with respect to potential range and ammunition inventory management.

At the same time that these conflicts in land use and environmental requirements are expanding, the Army is undergoing transformation. What this means for training and testing land requirements is unknown. What is known is that the effective operational footprint for the typical Army Brigade (BDE) has increased significantly since WWII. A WWII Brigade was expected to effectively control and operate within an area of approximately 8 by 12 kilometers (km). During Desert Storm, the typical BDE was expected to effectively operate within an area of 50 by 65 km. (Macia 2000). With Army transformation, the effective area of operation may increase, especially with the advent of continuing weapons and equipment modernization.

The Army Plan (TAP) indicates that "Live training will continue to be the cornerstone of training" (Chenkin 2000). It is well-known that the services need to "train as we fight." The question is: "Will there be enough unconstrained land available in the future to meet these objectives?"

3 Issue Recognition and Complexity

The issue of encroachment recently came to the forefront as a result of a DoD Senior Readiness Oversight Council (SROC) initiative. In 2000 the SROC tasked the Defense Test and Training Steering Group (DTTSG) to look at encroachment issues. Among the issues targeted for review were the ESA (and its critical habitat requirements), unexploded ordinance (UXO) and its potential constituents, frequency encroachment, maritime sustainability, the national airspace system, air quality, airborne noise, urban growth, and outreach (*Defense Environmental Alert* 2001). While not all of these encroachment issues affect the Army, their high-level recognition as sustainment issues is unprecedented.

In late 2000, working groups for the DTTSG completed "Draft Pre-Decision Working Papers" on this set of issues (*Airborne Noise Encroachment Action Plan* 2000). These "working papers," described as action plans, did an excellent job in describing the issues and identifying impacts to maintaining military capability. They also point out a consistent relationship between the issues and local and regional land use planning.

The *Endangered Species Act Encroachment Action Plan* (2000) indicates that "...military installations have become the only large undeveloped areas remaining in local urban areas as private development continues unabated." Under the ESA Federal agencies are required to utilize their authorities for the conservation and recovery of threatened and endangered species. The result is installation land use restrictions that affect the utility of lands for military use. This affects both small and large installations. In the case of the NTC and the Desert Tortoise, designation of critical habitat has restricted BDE and battalion (BN) task force training operations, the purpose of the NTC. Similarly, live-fire training at the Makua Military Reservation, Hawaii (a small 4,190-acre installation) has been restricted for both the Army and the Marines due to listed species.

The *Air Quality Range Sustainability Action Plan* (2000) indicates that while the Clean Air Act (CAA) establishes minimum compliance requirements, "States are then required to implement the program..." and "...many local areas impose additional CAA rules." This results in a complexity of state and local requirements that must be met by installations. The movement of the Chemical and Military Police Schools from Fort McClellan, Alabama to Fort Leonard Wood, Missouri required that new activities associated with the schools be permitted by the

State. The permit issued included conditions to train with fog oil. As a result, "Training activities have been reduced and scheduling range use has become much more difficult" (*Air Quality Range Sustainability Action Plan* 2000). Conversely, at Fort Irwin, California, the NTC "has been excluded from non-attainment area designation due to a local agreement with regulators" (*Air Quality Range Sustainability Action Plan* 2000).

The *Airborne Noise Encroachment Action Plan* (2000) recognizes that while "DoD weapon systems are exempt from regulation under the Noise Control Act of 1972, DoD must still assess the impact of weapon system noise." It further recognizes that "It is compliance with these laws, local community pressures, or state, regional or congressional pressures that often result in restrictions and/or reductions to military training" (*Airborne Noise Encroachment Action Plan* 2000). Examples of restrictions to military activities from airborne and large-caliber weapons noise are numerous. They are also costly in terms of claims. As the *Airborne Noise Encroachment Action Plan* (2000) indicates, claims against the military for noise damage include "structural damage, i.e. cracked foundations, broken windows, and impacts to domestic animals." During one 5-year period "the Army Claims Service received approximately \$60 million in individual claims related to noise damage," and this figure only included claims above \$25 thousand (*Airborne Noise Encroachment Action Plan* 2000).

Each of the encroachment action plans provides a list of actions that might be taken to relieve the pressures of encroachment. One action plan, the *Department of Defense Sustainable Ranges Outreach Plan* (2000), provides an extensive outline for informing stakeholders of military needs for sustainable ranges that support a broad spectrum of military activities. However, this plan, as with most recommendations in the other action plans generally focuses on a top down approach. This includes a variety of guidance and process actions at the Office of the Secretary of Defense (OSD) and individual service level, coordination and outreach to the Federal regulatory agencies, and continued research and development at a national level to address scientific unknowns associated with encroachment issues.

Accomplishment of any and all of these actions will improve the understanding of the issues and set the military on the right course of action. However, as many of the actions plans point out, the crux of the encroachment issue is dealing with the local stakeholders, specifically as the issues relate to land use and development in a regional context. These local aspects of the issues are not ignored. The *Department of Defense Sustainable Ranges Outreach Plan* (2000) recognizes the need for DoD Regional Environmental Coordinators to "develop long-term relationships with regulatory, tribal, state and local governments, and

community leaders..." It further suggests that range/installation commanders and public affairs officers "partner with communities in place to identify and explore the mutual benefits to citizens and the military from the presence of ranges and military operating areas" (*Department of Defense Sustainable Ranges Outreach Plan* 2000).

Similarly, the *Endangered Species Act Encroachment Action Plan* (2000) recommends that "installations that do not have community engagement offices" establish and appropriately staff these offices and begin to actively engage local communities. The *Urban Growth Encroachment Action Plan* (2000) recognizes a need for "a cooperative working policy – military planners and city planners, mayors and installation commanders – defining the mutual needs and expectations of the region and working within the constraints identified to meet these goals."

4 Planning Guidance and Tools

The primary issue associated with influencing land use planning around military installations is not new. A 1999 OSD-sponsored report titled *Sustainable Planning: A Multi-Service Assessment 1999* (undated) had a goal "to establish a common understanding of sustainable development that can be applied to planning..." While assessing DoD planning policy, a major issue identified was that, "Current planning policies tend to limit the planning perspective to those assets found within the installation boundary; they do not strongly support planning with a regional perspective" (*Sustainable Planning: A Multi-Service Assessment 1999* undated). This report further indicated that, "Language found in planning policy suggests, but does not fully describe, that communities and regions located beyond installation boundaries should be considered in the military planning process" (*Sustainable Planning: A Multi-Service Assessment 1999* undated).

These planning policy shortfalls are the heart of the encroachment issue. Most Army land use planning to date has been internally focused. It has also been project oriented. Master Planning in the past tended to focus on the requirements for Military Construction, Army (MCA) and the management of internal real property. There are a few external successes or selected tools available to coordinate military requirements with planning decisions of local and regional institutions. Both the 1999 *Sustainable Planning* report and the series of *Encroachment Action Plans* generously cite two such tools: the Air Installation Compatible Use Zone (AICUZ) and the Joint Land Use Study (JLUS) programs.

The AICUZ program, established in the mid 1970s, and its variations (e.g., the Range Air Installation Compatible Use Zone [RAICUZ]) have been effective, yet selectively used by the services to foster compatible land use planning in communities. The purpose of AICUZ is to prevent incompatible development of land in high noise exposure areas. It provides installation planners with the noise exposure information associated with military activities. This information is used in consultation with local planning agencies and development authorities to plan land use. AICUZ has successfully influenced land use and zoning in a number of communities in several states. However, the effort to complete AICUZ studies is significant and maintenance of the interaction with local communities must be continuous.

The JLUS program, established in 1985, and managed by the DoD Office of Economic Adjustment (OEA) is "designed to encourage cooperative land use planning between military installations and the surrounding communities so that future community growth and development are compatible with the training or operational mission of the military installation" (*Joint Land Use Study* 2001). Under this program the OEA provides grants to communities to participate in land use studies with military installations. The Army has used this program with some success in the past, but it again requires a concentrated effort on the part of the installation. This later requirement has precluded its extensive use.

There have also been other successful approaches to affecting/influencing land use and encroachment issues in and around installations. In dealing with the RCW in the southeastern United States, the U.S. Army Forces Command (FORSCOM) has coordinated with The Nature Conservancy (TNC). As a result, TNC has purchased land near installations specifically to promote RCW habitat. In the future this may relieve the critical habitat burden on installations. Also of a local nature, the Naval Air Station (NAS) Oceana, long faced with noise issues, established a Community Planning Liaison Office (CPLO). The purpose of the CPLO is "to ensure [1] missions are not degraded through land use changes; [2] efforts to limit mission impacts on ... neighbors; [3] the smooth integration – on and off station – of new missions; and [4] a close relationship with surrounding communities" (Pierson 2000). This office has four employees and is in the direct chain of command of the NAS Commanding Officer.

5 The Opportunities and the Key

While the information in the preceding sections identifies a complex picture for influencing land use in and around military installations, there are opportunities. Even though many installations are already besieged by development adjacent to their boundaries, a recent General Accounting Office (GAO) survey of 1,926 local communities (768 counties and 1,158 cities) with populations of 25,000 indicated that "72 percent of the cities classified their current involvement in planning for and managing growth as high or very high, as did 59 percent of the counties" (Emrath, 2000). To this end, many local governments have established land use plans, although not required by their states. While the local reasons for wanting to manage growth are more related to infrastructure and government services, the indication is that many communities are concerned about growth and land use change.

Therefore, the time is optimal for planners to engage communities and regional governing bodies with overtures of land use control. A critical requirement is that this be accomplished at the local level. "The authority to regulate land use resides with the states, but all 50 states have delegated substantial land-use planning authority to local governments within their jurisdictions..." (Emrath 2000). Therefore, influencing local land use decisions requires a local approach.

6 Conclusion

While this document has described land use tools available to installations, there is a key to opening these and other opportunities. This key is a professional, dedicated staff at the installation level. Similar to the CPLO for NAS Oceana, this staff should have a dual objective of supporting the "mission" and installation "neighbors." This will require a dedicated staff trained in community planning and conversant in the requirements of the mission. This staff must be supported by the installation command and, as appropriate, have direct access to the command. To be effective this office should be supported by other installation staff elements (i.e., the environmental office and range operations). It should have access to tools available to work with government, community planning, and business and development associations. Only this type of local approach to dealing with encroachment can ensure that the Army and DoD can sustain their training and range land capabilities into the next century.

References

- Airborne Noise Encroachment Action Plan*. November 2000. Draft Pre-Decision Working Papers developed for the Defense Test and Training Steering Group (DTTSG).
- Air Quality Range Sustainability Action Plan*. October 2000. Draft Pre-Decision Working Papers developed for the Defense Test and Training Steering Group (DTTSG).
- Chenkin, L. October 2000. "Range Commanders Council Range Environmental Group, Information Brief." Presentation to the Range Commanders Council Range Environmental Group, Washington, DC.
- Department of Defense Directive 4715.11 August 17, 1999. *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Within the United States. Directive*.
- Department of Defense Sustainable Ranges Outreach Plan*. November 2000. Draft Pre-Decision Working Papers developed for the Defense Test and Training Steering Group (DTTSG).
- Defense Environmental Alert*. January 30, 2000. "Readiness Panel Issues Proposals on Test, Training Range Challenges." Retrieved from the WorldWide Web March 10, 2001 via the Defense Environmental Information Management Exchange (DENIX).
<http://www.denix.osd.mil>.
- Emrath, P. December 2000. "How Communities Manage Growth." *Housing Economics*, Vol. 48 Issue 12, Washington, DC, pp 6-10. Retrieved from the Worldwide Web February 24, 2001 via ProQuest, <http://proquest.umi.com>.
- Endangered Species Act Encroachment Action Plan*. November 2000. Draft Pre-Decision Working Papers developed for the Defense Test and Training Steering Group (DTTSG).
- Joint Land Use Study*. 2001. Office of Economic Adjustment website,
<http://emissary.acq.osd.mil/oea/main>.
- Leslie, M., G.K. Meffe, J.L. Hardesty, and D.L. Adams. 1996. *Conserving Biodiversity on Military Lands: A Handbook for Natural Resource Managers*. The Nature Conservancy, Arlington, VA.
- Macia, T.E. December 7, 2000. "Army Vision for Sustainable Range Management." Presentation at the Army Worldwide Environmental and Energy Conference, Atlanta, GA.
- Pierson, F. December 2000. "The Military Airfield and the Community – Time for a Paradigm Shift?" Presentation at the 2000 Strategic Environmental Research and Development Program and Environmental Security Technology Certification Program Annual Symposium, Washington, DC.

Summary of Listed Species, Listings and Recovery Plans as of 2/28/2001. Threatened and Endangered Species System, U.S. Fish and Wildlife Service website, <http://ecos.fws.gov/tess/html/boxscore-feb-2001-print.html>.

Sustainable Planning: A Multi-Service Assessment 1999 (undated), EDAW, Inc., Alexandria, VA.

Unexploded Ordnance - Munitions Encroachment Issue Action Plan. December 2000. Draft Pre-Decision Working Papers developed for the Defense Test and Training Steering Group (DTTSG).

Urban Growth Encroachment Action Plan. December 2000. Draft Pre-Decision Working Papers developed for the Defense Test and Training Steering Group (DTTSG).

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